

December 11, 2006
Case No.: DE 030105 (7790/464)
Serial No.: 10/552,811
Filed: October 11, 2005
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SPECIFICATION AMENDMENT

Please amend the Title starting on page 1, line 1 as follows:

"Mercury free [[High-pressure]] high-pressure metal halide discharge lamp"

Please amend the paragraph starting on page 1, line 26 as follows:

"In the discharge lamp according to the invention, the overall amount of the atomic halogen is between 1-30 $\mu\text{mole}/\text{cm}^3$, while the overall amount of zinc is $> 1 \mu\text{mole}/\text{cm}^3$ and the zinc/atomic halogen [[molear]] molar ratio is > 0.5 . A discharge lamp in which the zinc/atomic halogen [[molear]] molar ratio is > 1 is very particularly preferred. Such discharge lamps may be operated without electrodes, with the coupling-in of energy taking place in the radio-frequency range (0.1 - 1000 MHz) or in the microwave range ($> 1000 \text{ MHz}$). However, it is also possible for the coupling-in of energy to be carried out by means of metal electrodes."

Please amend the paragraph starting on page 3, line 4 as follows:

"The discharge lamps according to the invention produced in accordance with examples of embodiments 1 and 2 each comprise about 7 $\mu\text{mole}/\text{cm}^3$ of zinc and iodine. An experiment with twice the filling amount resulted in an approximately 10% lower efficiency, and this can probably be explained by self-absorption of the zinc iodine radiation in the outer area of the discharge. This means that the overall amounts of zinc and iodine in the gas phase must lie approximately in the range from 1 to 30 $\mu\text{mole}/\text{cm}^3$. The partial pressure of zinc iodide in the emitting inner area of the discharge is proportional to the product of the overall pressure Σp_{Zn} of the Zn and the overall pressure Σp_{I} of the iodine in the discharge, i.e., a desired partial pressure of zinc iodide may be realized with different Zn/I [[molear]] molar ratios. High iodine pressure are undesirable since they may lead to quartz transport (i.e., the wall becomes milky) and ignition problems on account of the formation of HI with hydrogen from impurities. It is therefore favorable to select the Zn/I [[molear]] molar ratio to be as high as possible, i.e. to meter zinc in excess ($\text{Zn}/\text{I} > 1$), in order to keep the iodine pressure as low as possible. If, as shown in

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example of embodiment 2, CaI_2 is added, then for a coldest spot temperature of around 1200 K and an overall iodine pressure ΣpI of around 1.5 bar an overall calcium pressure $\Sigma p\text{Ca} \approx 0.2$ mbar is calculated, which corresponds to an overall amount of calcium of 1 nm/cm³. This amount is about the lower limit in order to obtain a noticeable effect in the shifting of the color point."